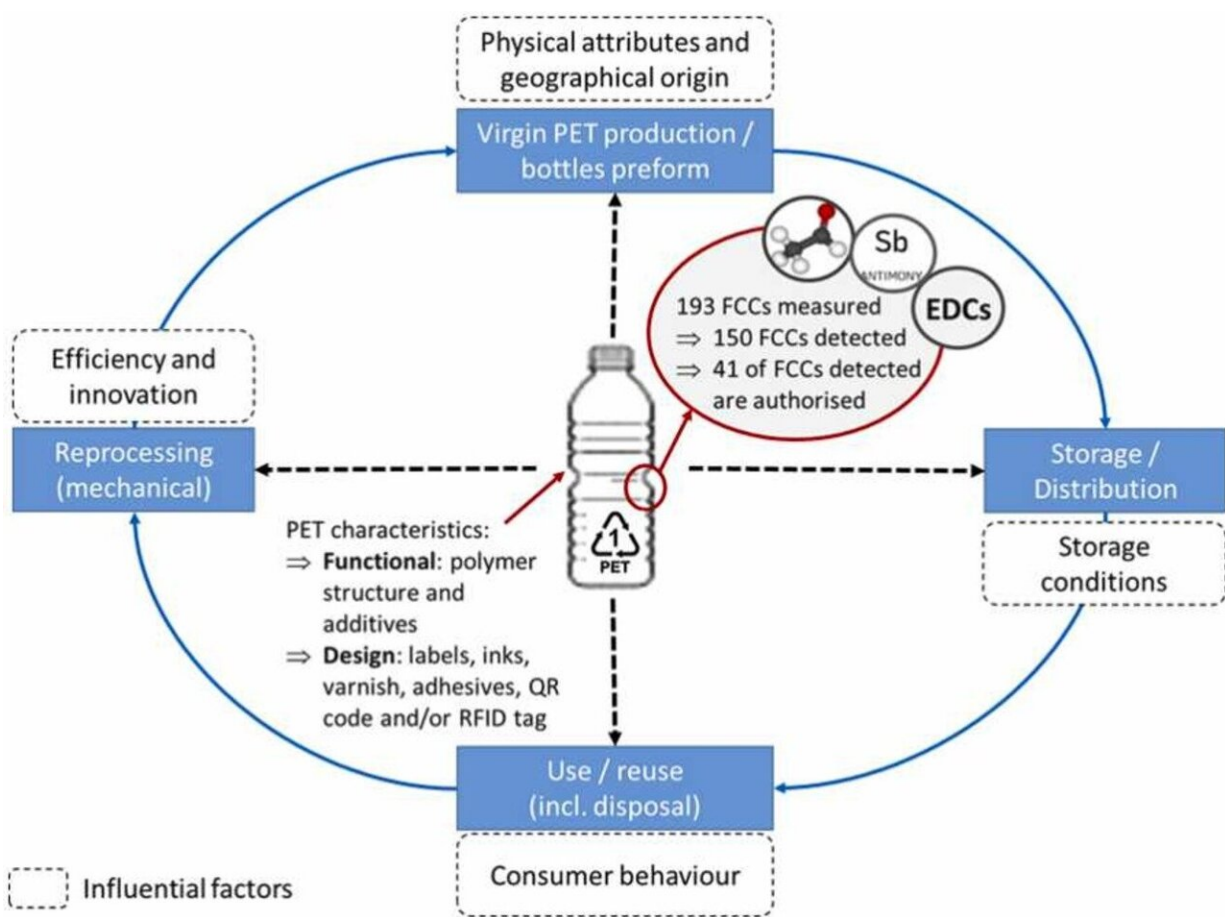


Better recycling required to remove potentially harmful chemicals from bottled drinks, new study warns

March 21 2022, by Tim Pilgrim



Graphical abstract. Credit: *Journal of Hazardous Materials* (2022). DOI: 10.1016/j.jhazmat.2022.128410

Researchers from Brunel University London found 150 chemicals that had leached into drinks from plastic bottles, with 18 of those chemicals found in levels exceeding regulations.

So-called food contact chemicals (FCC) are commonly found in packaged food and drink, with most considered perfectly safe in low concentrations.

However, research shows that drinks bottled using recycled [polyethylene terephthalate](#) (PET) can contain higher concentrations of FCCs than drinks bottled using new virgin PET, suggesting problems with the [recycling process](#) may be leading to some bottled drinks being contaminated.

"We found these chemicals can come from various sources, such as the catalysts and additives used during production and degradation during PET production, and degradation that can happen across a bottle's lifecycle," said Dr. Eleni Iacovidou, a lecturer from Brunel's Center for Pollution Research and Policy, who led the study.

The researchers point to several factors that can result in FCCs being present in bottled drinks, including the production of the empty bottles, but also the conditions under which bottles are filled, stored, distributed, and shelved, for example, being exposed to high levels of sunlight or humidity.

To reduce the number of chemicals found in bottled drinks, the study suggests using a technology known as the "super cleaning process," a three-stage process to clean old plastics before recycling—a high-temperature wash, a gas wash, and a [chemical](#) wash.

"Recycling processes already include the cleaning of the bottles before turning them into secondary raw material for use," said Dr. Iacovidou.

"By investing in new super-cleaning technologies, we can maximize the likelihood of decontaminating recycled PET to levels similar to virgin PET."

The report, published in the *Journal of Hazardous Materials*, also suggests that recyclers need to improve how they collect, sort and reprocess PET bottles, and [bottle](#) manufacturers should prioritize design for recycling to improve the quality of recycled goods.

However, the ultimate solution is to start weening ourselves off the use of PET altogether, said Dr. Iacovidou.

"We all have a responsibility to bear. We need to start thinking about how to prevent the use of PET bottles in our households by investing, for example, in water filters, or large water containers and learning how to dispose of our plastic waste properly. If we reduce our consumption of PET then we will drive change further up the system. Less demand equals less production in the first place."

Dr. Iacovidou concluded: "Most importantly, [greater transparency](#) and improved communication in the entire production, consumption, and management system are needed for creating a functional economy where wasted resources find their way back into the system with the least trade-offs, especially those relevant to health and safety,"

Unpacking the complexity of the PET drink bottles value chain: A chemicals perspective was published by the *Journal of Hazardous Materials*.

More information: Spyridoula Gerassimidou et al, Unpacking the complexity of the PET drink bottles value chain: A chemicals perspective, *Journal of Hazardous Materials* (2022). [DOI: 10.1016/j.jhazmat.2022.128410](https://doi.org/10.1016/j.jhazmat.2022.128410)

Provided by Brunel University

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